

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)	
)	
Service Rules for Advanced Wireless Services)	WT Docket No. 12-70
in the 2,000–2,020 MHz and 2,180–2,200 MHz Bands)	
)	
Fixed and Mobile Services in the Mobile Satellite)	
Service Bands at 1,525–1,559 MHz and 1,626.5–)	ET Docket 10-142
1,660.5 MHz, 1,610–1,626.5 MHz and 2,483.5–)	
2,500 MHz, and 2,000–2,020 MHz)	
)	
Service Rules for Advanced Wireless Services in the)	
1,915–1,920 MHz, 1,995–2,000 MHz,)	WT Docket 04-356
2,020–2,025 MHz and 2,175–2,180 MHz Bands)	

To: The Commission

Comments of EIBASS

1. Engineers for the Integrity of Broadcast Auxiliary Services Spectrum (EIBASS) hereby respectfully submits its comments in the above-captioned Notice of Proposed Rulemaking (NPRM) and Notice of Inquiry (NOI) relating to Fourth-generation Advanced Wireless Services (AWS4).

I. If AWS “J” Block at 2,020-2,025 MHz is Reallocated to Allow Fixed, High-Power Terrestrial Base Stations, Those Stations Should Have the Same Obligation to Protect ENG-RO Sites as 2,110-2,120 MHz AWS Base Stations

2. At Paragraph 21, and again at Paragraphs 42–43, the NPRM proposes an alternative AWS/MSS band plan, where the AWS-2 “J” block at 2,020-2,025 MHz could end up with fixed, high-power¹ Terrestrial base stations. Should the Commission end up adopting that proposal by Ericsson, Inc. (Ericsson),² EIBASS asks that the current requirement in Section 27.1133 of the

¹ Paragraphs 58–60 propose base station power limits of 1,640 watts EIRP in non-rural areas, and 3,280 watts EIRP in rural areas. Of course, parties can differ in what constitutes a “rural area,” and attempts to define congested vs non-congested or rural vs non-rural for spectrum purposes have proven surprising difficult for the Commission, as the MB Docket 90-500 (BAS frequency congested areas); ET Docket 98-142 (MSS 7 GHz Feeder Downlinks); ET Docket 98-206 (MSS 13 GHz Feeder Uplinks); ET Docket 03-254 (MSS Uplinks, Downlinks, and “growth zones”) records demonstrate.

² At Page 9, the July 8, 2011, Ericsson proposal to the ET Docket 10-142 rulemaking suggested shifting MSS “downlink” (*i.e.*, terrestrial base station operation) operation from 2,000–2,020 MHz to 2,005–2,025 MHz, so as to provide a 5 MHz guard band between MSS and PCS. However, doing so would eliminate the *de*

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AWS rules be made applicable. Section 27.1133 requires that fixed AWS base stations at 2,110–2,120 must protect 2,025–2,110 MHz TV Broadcast Auxiliary Services (BAS) operations, which includes fixed electronic news gathering (ENG) receive-only (ENG-RO) sites. As a result of a 2005 Petition for Rulemaking filed by the Society of Broadcast Engineers, Inc. (SBE),³ TV Pickup stations can add their ENG-RO sites to their licenses, making these fixed sites searchable in the ULS on a point-radius basis.⁴ Thus, a commercial mobile radio service (CMRS) licensee planning to build a fixed, high-power base station can check to see if the proposed site might be near an existing ENG-RO site, and take steps to select an alternative, non-proximity location. Or, if the existing CMRS architecture does not allow this, to coordinate in advance with the TV Pickup licensee and pay all reasonable and prudent costs for protective filters.

3. ENG-RO sites use highly-sensitive receivers, with noise floors varying from as low as -95 dBm when quadrature phase-shift keying (QPSK) modulation is used to about -87 dBm for 64 quadrature amplitude modulation (QAM). ENG-RO sites also use omnidirectional receiving antennas, or real-time remotely steerable directional antennas, to receive incoming news feeds from ENG platforms. While most ENG platforms are conventional ENG trucks, they can also include airborne operations from aircraft, helicopters and blimps. Because news events can occur at any location in a TV station's coverage area, TV stations make a substantial investment in one or more ENG-RO sites, typically near the top of a tall tower, on the top of a high-rise building, or on a mountain top, so as to ensure line-of-sight from mobile ENG platforms at news event to at least one ENG-RO site. Fixed, point-to-point TV Inter City Relay (ICR) microwave links, or sometimes fiber optic cable, are then used to relay the incoming news feed back to the TV station's studio for processing and ultimate broadcast.

4. ENG operations are designed to handle multiple NEWS feeds from the field, by being capable of receiving signals from news events at the edge of the TV Pickup station's operational area, and by being designed to allow for coordination with their own and other ENG users on the same channel using opposite polarities and site diversity. Thus,

- ENG-RO site receiving antennas are polarization-agile
- ENG-RO site receiving antennas are either omnidirectional, or directional and remotely-steerable in real-time and

facto PCS J-block guard band that now exists between other CMRS fixed terrestrial services (*i.e.*, base stations) and the 2,025–2,110 MHz TV BAS band.

³ September 6, 2005, SBE Petition for Rulemaking, which became RM-11308.

⁴ April 16, 2008, FCC Public Notice DA 08-892, *Licensees of Television Pickup Stations Now Have the Ability to Identify their Stationary, Receive-Only Sites on ULS, to Aid Coordination with Other Services*.

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- The noise floor and first active RF stage (front end) of the ENG receiver must be protected.⁵

5. Unlike calculations for the receive signal level (RSL) of a fixed, point-to-point link, where it is possible to calculate the unfaded RSL, apply the appropriate path reliability factors for multipath or rain attenuation, and protect that worst case RSL, an ENG-RO site requires protection of the receiver's noise floor, with no allowance for off-axis receiving antenna rejection or polarization discrimination. Thus, should a high-power terrestrial base station be constructed too close to an ENG-RO, the ENG-RO will need to be retrofitted with filters, the CMRS base station may need additional out-of-band-emission (OOBE) filtering, or both. Otherwise, the ability of the ENG user to cover news events at more-distant locations will be impaired.

6. At Paragraph 45 the NPRM proposes relaxing the OOBE suppression requirement for AWS4 operations from $70 + 10\log_{10}(\text{TPO}_{\text{watts}})$ dB to $43 + 10\log_{10}(\text{TPO}_{\text{watts}})$. Although the NPRM concludes that this change in the OOBE limits wouldn't cause interference to TV BAS operations at 2,025–2,110 MHz, EIBASS does not share the Commission's optimism about this 27 dB relaxation. Waiving the OOBE limit for low-power handsets is not the same as waiving the OOBE limit for fixed, high-power base stations. However, provided that Section 27.1133 is made applicable to any fixed operations at 2,020–2,025 MHz, EIBASS has no objection to the proposed rule change.

⁵ In the October 14, 2004, ET Docket 00-258 Seventh R&O, the Commission suggested a 0.5 dB noise floor protection criteria for *co-channel* Department of Defense (DoD) Space-Ground Link System (SGLS) uplinks at up to eleven sites sharing 2 GHz TV BAS spectrum. This protection criteria was formally documented in the April 30, 2009, Memorandum of Understanding (MOU) between SBE and the Department of Defense (DoD); see <http://apps.fcc.gov/ecfs/document/view?id=7020354936>. Strong adjacent-band signals can additionally cause interference to the sensitive receivers used at ENG-RO sites; the interference can be from OOBE from the nearby base station, which can only be mitigated by installation of more stringent filtering on the nearby base station. Or the interference can be brute-force overload (BFO) of the ENG receiver, which can only be mitigated by installation of special filters on the ENG receiver. In severe cases, filters must be added at both locations.

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II. Summary

7. Any MSS/PCS/AWS operation using fixed, high-power, “downlink” base stations at 2,020–2,025 MHz must be subject to Section 27.1133 of the FCC rules, so as to ensure continued protection of fixed ENG-RO sites, and thus the continued ability of broadcasters to quickly and expeditiously bring time-critical and potentially life-saving information from emergency scenes to the American public.

Respectfully submitted,

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